



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In The Matter of United States Patent Application:

Serial No. : 10/727,485  
Applicant : Karel Hajmrle et al.  
Filed : December 5, 2003  
Group Art Unit : 1714  
Confirmation No. : 2078  
Examiner : Lang, Amy T  
Title : Method for Producing Composite Material for Coating  
Applications  
Our File : T8467813US  
Date : July 22, 2008

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The Honorable Commissioner of Patents and Trademarks  
Washington, D.C.  
United States of America 20231

**Declaration under 37 CFR 1.132**

1. I, Karel Hajmrle, am a co-inventor of the subject matter which is claimed and for which a patent is sought on the invention in the above-mentioned United States patent application. I have received a Ph.D. in physical metallurgy from Laval University in Quebec City, Quebec, Canada. I have worked in the area of thermal spraying and abradable seals for over the last twenty-five (25) years, and am presently R&D Manager at Sulzer Metco (Canada), located in Fort Saskatchewan, Alberta, Canada.
2. On January 23, 2008, an office action was mailed by the United States Patent & Trademarks Office with respect to the above-mentioned United States patent application.
3. Amongst other things, the office action rejects claims 27-43, 60, and 76-92 on the basis that these claims are indefinite for using the expressions: "undersize particle fraction", and "desired particle size fraction", and "oversize particle fraction" under 35 U.S.C. 112.
4. It is my opinion that these expressions are commonly understood by a person of ordinary skill in the art. In particular, the meanings of each one of these terms, as understood by a person of ordinary skill in the art, are as follows:

(a) "undersize particle fraction": is that fraction of the dry agglomerates which is too fine to be used in the solid lubricant agglomerate;

(b) "desired particle size fraction": is that fraction of the dry agglomerates which will be used as the solid lubricant agglomerate after being stabilized at high temperatures.

(c) "oversize particle fraction" is that fraction of the dry agglomerates which is too coarse to be used in the solid lubricant agglomerate.

5. Additionally, in several of the rejections in that office action, the Examiner takes the position, or at least appears to take the position, that the binders described in U.S. Patent No. 5,122,182 issued to Dorfman ("Dorfman '182") and U.S. Patent No. 5,506,055 issued to Dorfman ("Dorfman '055") are inherently non-dispersible in water.

6. In this respect, I would like to explain dispersibility characteristics in water of the subject binders, and point out that it is not a necessary incident of the making of the respective spray compositions described in these patent documents that the binders in these cited references become non-dispersible in water. In order to function as a binder during the making of the spray composition in an aqueous medium, whether the binder is organic or inorganic, the binder must be dispersible in water so that the binder can effectively coat the surface of those solid particles which are configured to be bound to one another. After spray drying to form a dry agglomerate, one way to render the binder non-dispersible is to heat the dry agglomerate to a relatively high temperature. This drives off water which is chemically bound to the dry agglomerate, and changes the structure of the dry agglomerate such that the dry agglomerate assumes a form which is not dispersible in water.

7. In several of the rejections, the Examiner also cites U.S. Patent No. 5,122,182 issued to Dorfman ("Dorfman '182"), and relies on Dorfman '182 for

disclosing the use of bentonite as a binder in a spray composition, and that such binder is inherently non-dispersible.

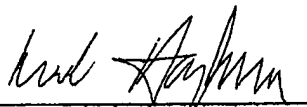
8. I have reviewed Dorfman '182 and would like to point out that the binder in Dorfman '182 is an organic binder, and not bentonite. Organic binders are dispersible in water. Further, with respect to the resulting spray composition including the organic binder, when heated to a relatively high temperature, the organic binder is burnt off from the composition, and does not remain part of the composition, let alone change its structure to become non-dispersible in water.

9. Further, even though Dorfman '182 does disclose adding bentonite during the making of the agglomerated composite powder, the bentonite is provided for the purpose of functioning as a non-metal (see column 1, lines 60-63), ie. as a raw material that plays the role of a softener in the abrasible coating, and does not function as a binder. Without the non-metal, the abrasible coating would be almost pure metal, ie. hard and not abrasible. With the non-metal in the coating, the coating's tensile strength, for instance, is lowered, and the coating is, thereby, rendered abrasible.

10. Moreover, although bentonite appears to be included during the making of the Dorfman '182 composition, the bentonite does not function as a binder. The bentonite used in Dorfman '182 is a species of calcined siliceous clay (see column 2, lines 47 to 50), and the calcined form of bentonite is not suitable for use as a binder due to the fact that the calcined form of bentonite is non-dispersible in water. During calcination of bentonite (ie. raw, uncalcined bentonite), chemically bound water from raw bentonite escapes from the raw bentonite to form calcined bentonite. The structure of the calcined bentonite is different from the the structure of the raw bentonite. The raw bentonite is in the form of fine platelets which can coat the surface of solid lubricant particles when introduced into an aqueous slurry of the solid lubricant particles. During calcination, the platelets sinter together to form a mass of particles which can no longer be dispersed in water.

10. I declare under penalty of perjury under the laws of the United States of America that the foregoing is true and correct.

Executed on the 23 day of July, 2008.

A handwritten signature in cursive script, appearing to read "Karel Hajmrle", written over a horizontal line.

Karel Hajmrle

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